

NAME \_\_\_\_\_ DATE \_\_\_\_\_

CLASS \_\_\_\_\_ TEACHER \_\_\_\_\_

Organic Chemistry: Organic Families (Form A)

I. Mark those sentences that are true with a T; change those that are false so as to make them true statements.

a. In structural formulas, - = :

b. Fats and oils are members of the ester family.

c.  $\begin{array}{c} \text{H} & \text{H} & \text{H} \\ | & | & | \\ \text{H} - \text{C} - & \text{C} - & \text{C} - \text{OH} \\ | & | & | \\ \text{H}_3\text{C} & \text{H} & \text{H} \end{array}$  and  $\begin{array}{c} \text{H} & \text{H} & \text{H} & \text{H} \\ | & | & | & | \\ \text{H} - \text{C} - & \text{C} - & \text{C} - & \text{C} - \text{OH} \\ | & | & | & | \\ \text{H} & \text{H} & \text{H} & \text{H} \end{array}$  are structural isomers.

II. Choose the answer(s) that will make each of the following statements correct.

a. The most common type of reaction in which the unsaturated hydrocarbons are involved is (1) oxidation, (2) replacement, (3) addition, (4) hydrolysis, (5) none of these answers.

b. The functional group that is characteristic of organic acids is (1) -OH, (2) -CHO, (3) -COOH, (4)  $\begin{array}{c} \text{O} \\ || \\ \text{C} - \end{array}$ , (5) none of these answers.

c. Some of the places one might find esters in everyday life include (1) in tinctures, (2) in essences and flavors, (3) in solvents, (4) as an anesthetic, (5) none of these answers.

III. Choose the word or phrase that will make each of the following statements complete and correct.

a. A homologous series of compounds is one in which \_\_\_\_\_.

b. The structural formula for 2,3 dichloropentanol-1 is \_\_\_\_\_.

c. Alkane  $\xrightarrow{(O)}$  \_\_\_\_\_  $\xrightarrow{(O)}$  \_\_\_\_\_  $\xrightarrow{(O)}$  \_\_\_\_\_  $\xrightarrow{(O)}$  \_\_\_\_\_.

IV. Answer the following essay questions.

a. Define and give one example each of the following: (1) a straight-chain hydrocarbon, (2) a branched-chain hydrocarbon, (3) a cyclic hydrocarbon, (4) an aromatic hydrocarbon, (5) an aliphatic hydrocarbon.

b. What "fractions" are obtained in the fractional distillation of petroleum? What are some common components and some uses of each fraction?

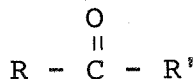
c. Of what practical value are members of the aldehyde and ketone families?

NAME \_\_\_\_\_ DATE \_\_\_\_\_  
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Organic Chemistry: Organic Families (Form B)

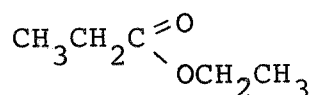
I. Mark those sentences that are true with a T; change those that are false so as to make them true statements.

a. Aldehydes:



b.  $\text{RNH}_2$  is an amide.

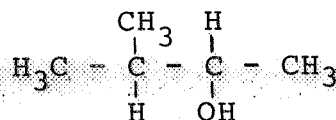
c. The product of acetic acid and ethyl alcohol is



II. Choose the answer(s) that will make each of the following statements correct.

a. Saturated hydrocarbons are also known as (1) the methanes, (2) the alkanes, (3) the paraffin hydrocarbons, (4) the alkenes, (5) none of these answers.

b. The proper name for the compound at the right is (1) methyl alcohol, (2) 2 methyl butanol, (3) 2 methyl butanol-3, (4) 1,1 dimethyl propanol-2, (5) none of these answers.



c. Which of the following is(are) (an) aromatic compound(s): (1) cyclohexane, (2) benzene, (3) phenol, (4) cyclopentane, (5) none of these answers.

III. Choose the word or phrase that will make each of the following statements complete and correct.

a. The structural formula of 2,3 dichloropentane is \_\_\_\_\_.

b. High temperature, pressure, and use of catalysts are characteristics of reactions involving petroleum and are illustrations of the following chemical property of hydrocarbons: \_\_\_\_\_.

c. An equation illustrating the primary chemical property of the alkenes is \_\_\_\_\_.

IV. Answer the following essay questions.

a. What are some of the chemical reactions which are used to improve upon "natural" gasoline?

b. What is meant by "structural isomers?" Illustrate by showing all possible isomers of pentanol.

c. Explain how methane, methanol, methanal, and methanoic acid are related chemically.